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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/683,927 | 03/04/2002 | Matthew J. Walker | GEMSA0126PUS | 3804 |
| 27256 | 7590 | 10/03/2003 | EXAMINER SONG, HOON K | |
| ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250 SOUTHFIELD, MI 48034 | | | ART UNIT 2882 | PAPER NUMBER |

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,927

Applicant(s)

WALKER ET AL.

Examiner

Hoon Song

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 30-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 38-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-29 and 38-40, drawn to a method of identifying a region of interest, classified in class 378, subclass 98.
- II. Claims 30-37, drawn to a user interface, classified in class 378, subclass 210.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice an x-ray image subtraction or addition system.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Angela Brunetii on September 11, 2003 a provisional election was made without traverse to prosecute the invention of I, claims 1-29 and 38-40. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30-37 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-17, 26-29 and 38-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Ganin et al. (US 6459765B1).

Regarding claim 1, Ganin teaches a method for identifying a region of interest for a digital x-ray system, said method comprising the steps of:

obtaining a low-dose preshot image (column 3 line 15+);

overlaying (column 3 line 20+) said preshot image with a predefined configuration having at least

one division (column 3 line 28+, configuration depending on Ion chamber cells);

selecting at least one division from said predefined configuration to identify a

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region of interest for at least one subsequent diagnostic image (column 3 line 40+);

determining exposure characteristics for said subsequent diagnostic image based on said identified region of interest (column 3 line 40+);

obtaining at least one diagnostic image using said determined exposure characteristics (column 3 line 58+).

Regarding claim 2, Ganin teaches that preshot image is a prior diagnostic image (column 3 line 15+).

Regarding claim 3, Ganin teaches that predefined configuration is a simple NxM matrix structure having simple geometric shapes for each cell of said matrix.

Regarding claim 4, Ganin teaches said simple geometric shapes are square.

Regarding claim 6, Ganin teaches that said step of selecting at least one division further comprises the step of weighting said region of interest for exposure control management (column 3 line 33+).

Regarding claim 7, Ganin teaches that said weighting is accomplished by way of a relative unity-normalized weighting coefficient (column 3 line 33+).

Regarding claim 8, Ganin teaches that said weighting is accomplished by way of applying variable half-tone percentages to said region of interest (column 3 line 33+).

Regarding claim 9, Ganin teaches that the steps of modifying said predefined configuration according to exam specific characteristics (column 3 line 25+).

Regarding claim 10, Ganin teaches that the step of adjusting said predefined configuration based on a patient size (column 3 line 25+).

Regarding claim 11, Ganin teaches that said step of overlaying a predefined configuration further comprises choosing a predefined configuration for a specific exam type (column 3 line 25+).

Regarding claim 12, Ganin teaches that said specific exam type is anatomy specific (column 3 line 22+).

Regarding claim 13, Ganin teaches that said specific exam type is orientation specific (column 3 line 21+).

Regarding claim 14, Ganin teaches that said step of overlaying a predefined configuration further comprises choosing an exam specific configuration from a database of predefined image masks (column 5 line 38+).

Regarding claim 15, Ganin teaches that said database of predefined image masks contains image masks derived from a representative population (column 6 line 1+).

Regarding claim 16, Ganin teaches that the step of saving a modified configuration (column 5 line 27+).

Regarding claim 17, Ganin teaches that the step of adjusting a geometry of said division to further define said region of interest.

Regarding claim 18, Ganin teaches that said step of adjusting a geometry further comprises adjusting a size of said division.

Regarding claims 26 and 27, Ganin teaches that the steps of:

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dividing said identified region of interest into segments (column 5 line 8+);

applying an algorithm to identify areas of said region of interest that contain non-value added information (column 6 line 65+);

using histogram techniques to exclude areas of non-value added information during said step of determination of exposure characteristics (column 6 line 65+).

Regarding claim 28, Ganin teaches that the steps of:

communicating said selected division and weighting of said division to a processor (column 6 line 1+);

processing said diagnostic image using said region of interest information to enhance an output of said at least one diagnostic image (column 6 line 1+).

Regarding claim 29, Ganin teaches that the steps of:

acquiring multiple images;

modifying said predetermined configuration between multiple image acquisitions (when more than one image processes are performed).

Regarding claim 38, Ganin teaches a method of exposure management in a digital x-ray system, said method comprising the steps of:

preparing for acquisition of at least one diagnostic image;

selecting an exam type from a database (column 5 line 38+);

selecting a default region-of-interest configuration for said selected exam type (column 5 line 25+);

modifying said default region-of-interest configuration as needed (column 5 line 8+);

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acquiring a preshot image using a low dose of radiation (column 4 line 31+);
correcting said preshot image by selecting divisions in said region-of-interest
configuration (column 4 line 45+);
predicting a required exposure for at least one diagnostic image from said
corrected preshot image (column 4 line 10+); and
acquiring at least one diagnostic image.

Regarding claim 39, Ganin teaches that the step of selecting between an
automatic mode and an interactive mode for said step of correcting said preshot image
(column 2 line 63+).

Regarding claim 40, Ganin teaches that the steps of:
correcting said at least one diagnostic image using information from said preshot
image;
displaying (32) said at least one diagnostic image;
processing said at least one diagnostic image using image processing
techniques to enhance a desired result for said at least one diagnostic image; and
displaying (32) said processed diagnostic image.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ganin in view of Shepherd et al. (US 6233473).

Ganin fails to teach a triangle subdivision.

Shepherd teaches a triangle subdivision of region of interest.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to adopt Shepherd's triangle subdivision of region of interest because it would provide better fitting shape for certain region of body part than square shaped division (figure 6a).

Claims 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganin in view of Watanabe (US 6325537B1).

Ganin fails to teach methods of changing region of interest by adjusting detector or source.

Watanabe teaches methods of changing region of interest by source image distance and source object distance (column 6 line 3+).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to adopt the methods of Watanabe in order to maintain constant magnification ratio (column 6 line 15+)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 703-308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song H195


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER